The monstrous award of Jos. L. Lowry, Mechanical Engineer of the City of Pittsburgh, against me as contractor for the construction of the Water Works Machinery for the City of Pittsburgh, has been sustained by the Supreme Court and by it I have had taken from me the fruits of my life's labor and left with a mountain of debt which I can never hope to lift: but worse than that, I have been branded as an incompetent or dishonest contractor.

This wrong falls not only on me, but they have taken from my bondsman a sum greater than men ordinarily accumulate in a life time.

There seems to be a general impression that this award was tried by the Courts and the Engineers decision approved. This a not the case: The contracts with the city provided that in case any dispute arose between the city and me touching the quantity, quality or value of the work it should be submitted to the Mechanical Engineer. I supposed this was the ordinary agreement inserted in contracts for large work to prevent the stoppage of work if any differences arose during its progress. The Court held that under the contracts Lowry was the judge of all matters of LAW and FACT and his decision was final and they therefore held that neither I nor my bondsman could question his decision, even if it was the result of mistakes or fraud. We offered to show gross mistakes and palpable fraud and could have clearly shown it, but were not permitted to do so

All hope of getting any portion of the money which is fairly due to me is struck down by the decision of the Supreme Court and my bondsman has paid a large portion of the money awarded against me and will doubtless be compelled to pay the balance, but in justice to myself I wish to ask the consideration of the honest people of Pittsburgh to a statement of the facts and their judgment and condemnation of the manner in which I have been wronged and my bondsman robbed.

Before stating the facts let us see what the award was and how it was made up.

The contract price for the two pair of Engines was	$798,500.00
The extra work was.....	100,000.00
	$898,500.00
I had been paid	$593,296 84
Leaving balance due,.....	$305,203.16

The City's Engineer decided that I was not entitled to receive any part of this money, but, on the contrary, owed the city for breach of contract in furnishing bad iron.

On the first contract,.....	$143,500
On the second contract,.....	174,000
	$317 500

That is on a contract for engines to cost $798,500 I was in default to the extent of $622,703.16, and this, notwithstanding the fact that the engines have been in almost constant use six years, that the expense of repairs not of my work alone but including the work done by other parties, did not exceed $60,000 according to the report of the engineer to the Water Committee shortly after the award was made.

How then was the award made? First he wiped out all the money due to me as damages for delay under a provision of the contract providing for a forfeiture of $100 per day upon each pair after the time fixed for the completion of the engines.

Second, he charges as damages the cost of replacing all the cast iron in the engines except the beams and the dead weights. This is not a matter of conjecture, it was so asserted by counsel in the case before Judge Hice, and they had the figures made by his assistant of his estimate of the cost of replacing this iron and it was the exact amount found in the award as due by me.

Keeping these points in view I ask attention to the facts which are indisputable.

In 1872 I entered into a contract for the erection of the first pair of engines to be completed on or before Nov. 15th, 1873, on foundations to be furnished by the city on or before July 1st, 1873, for these I was to receive $423,500, and in 1873 I made another contract for the second pair of engines to be completed on or before Nov. 15th, 1874, foundations to be furnished by July 1st, 1874. For these I was to receive $375,000.

Immediately after making the contracts I purchased a large lot of iron which I believed to be the best for such work. This iron was seen by Mr. Lowry and his assistants and was used by me without any hint or suggestion that it was not proper for the purpose. The castings made from it were inspected by them and not only approved them and officially certified that they were satisfactory, but frequently expressed their satisfaction personally.

If any piece of machinery was not entirely satisfactory to them it was destroyed and new ones made without any question and I frequently made them over without any complaint by the Engineer.

No trouble arose until the Spring of 1875. As the work progressed the Engineer proposed to make some large changes and additions to the work, amounting to over $100,000. I told him I would make any changes that he wished if he would give me the proper orders for them, as the contract required and he said he would give me the necessary orders. After I had done a large portion of the work on the improved plans that were furnished to me, I repeatedly called at his office for the orders he had promised. He finally told me that he could not give me the orders for the changes. I asked him why? when he had given me his promise and I took his word in good faith and had done a large portion of this extra work. He (Mr. Lowry) said that he had the authority by resolution from the Water Commissioners to make the changes, but that Secretary Ross had neglected to put the resolution on the minutes of the Commissioners and that now he had no authority from the Water Committee to give the orders. I told him that it put me in a very bad position, as I had a large amount of work done, and asked him what I was to do about it. He said, "go ahead and finish them," and that he would pay me. I told him I could not do so, as he had not the power to pay me, and that any member of the Committee objecting would keep me from getting my pay; he said the Committee would pass anything that he would recommend. I still told him that I could not do it as he might die and then I would have no one to recommend it. His assistant, heard the conversation, and remarked that it was not likely both of them would die. I refused to do any further work without orders and told them I would be obliged to go back and build the engines on the original plans. He said if I took that stand it would ruin him and me too.

I remarked I could not see how it was to ruin him or hurt me; he said the City would abandon the work if they knew there was to be so much additional expense. I answered that it would be ruin to me if I did not get paid for it, and that I could not do it. I then appealed to the Water Committee for the orders, and after considerable delay at the hearing he admitted that he had agreed to give me the orders and the reason he did not do so was because he was afraid the tax payers would make such a howl about the expense. The Committee gave me orders for a large part of the extra work. This was in the Spring of 1875, about the time the foundations were finished. Up to this time I had no difficulty with the Engineer but when I showed that I was determined to have orders for the extra work he seemed to change and from that time on threw every possible obstacle in my way. The first thing he did was to condemn

five valve chambers in which some shrinkage cracks had appeared. They had been made nearly two years and laid in the weather two winters; they had collected snow and ice inside, and in the Spring the hot sun caused them to expand on top and crack some of them in the bottom. Some of the best founders in the city examined them and said they were as good as if not cracked, the cracks being in places which could not weaken the casting. The Engineer himself agreed that by putting a plate under them they would be strong enough, but after the plates were made he condemned the chambers and ordered me to make new ones, which I did, at an expense of about $20,000.

Afterwards he refused to give me an order for a change in the beams; I again appealed to the Committee. He denied sending me the drawings for the new beams and when asked how I got them he said his assistant had sent them to me without his consent. Mr. Hunter, a member of the Committee, picked up the drawings, and turning to the assistant, who was present, asked him by whose authority he had sent the improved beam drawing to me to have it made on that plan; he answered "By Mr. Lowry's orders." Lowry held his head down and was silent. Mr. Hunter then made a motion for the engineer to give me the necessary orders for the changes forthwith and it was put to vote and passed. The next day I received the order.

When I was ready to put the valve chamber in place, Lowry ordered that they be bedded in lead. This is something that was never heard of in machinery of such weight and such trying work. It was not contemplated when the contracts were made and I objected to it because it was not suitable, and told him that it would not stand, that it would squeeze out and cause the valve chambers to rock and possibly break the bed plates. He still insisted and I demanded that the city furnish lead. This caused further delay and finally the Committee ordered him to give the lead. He gave me about 6 tons and then refused to give the balance, about 20 tons. The effect was as I had told them, the lead squeezed out, causing them to rock and finally to break. This and the insufficiency of the receiving valves and a lack of air in the air vessels, was the real and only cause of the breaking of these chambers as is shown by the subsequent action. After the valve chambers broke the City had new ones for engines Nos. 3 and 4 made by the Atlas Works, which were represented to have a tensile strength of over 30.000 lbs. They were made in four pieces instead of two, saving shrinkage and were made much heavier than the first ones. They were put in by the Assistant Engineer in the same way. One of them, No. 4, is broken, and a few weeks ago the Commit-

tee made a contract with the Atlas Works, (the parties who made the one which broke) for a new one to replace it, which indicated that it did not break because it was rotten iron as they claim mine was. It is only a question of time when No. 3 will break also as it is subject to the same cause.

The new chambers for Nos. 1 and 2 were planed and laid on iron plates without lead. Mr. Brown, the present Engineer, having reported that they cannot be held on bed of lead, just as I told them when they were first put down.

After it was determined that new valve chambers should be made I proceeded to do so at great inconvenience which would have been prevented if the Engineer had condemned them when first made instead of waiting until they were finished and ready to be placed in position.

This and the controversy as to the form of the beams caused considerable delay and with other obstacles thrown in my way prevented an early completion of the work.

Notwithstanding all these delays, in April 1878, the engines were so far completed that I was ready to start them for testing. I asked for steam for that purpose, but was informed that the boilers were not completed. This was not my part of the work, as soon as I did this I was notified that I must furnish feed pumps, which I had received no drawings for, and which were not called for by the second contract and were dispensed with on the first, I having by order of the Engineer supplied another apparatus for feeding. I objected to furnishing them, but finally did so, and they are now useless for feeding, but have been turned into air pumps which I said should be supplied before starting the engines and about which the controversy arose which was used as an excuse for forfeiting my contract and taking from me the engines completed and ready for use. In July, 1878, I was furnished with steam and undertook to start the engines. After they had gotten fairly in motion the bottom fell out of one of the plungers, and as the beam came back, the plunger caught on the dead weights, causing an awful wrench to the entire machinery. Nothing was broken except the pillow block holding the beam in place. It is hard to conceive the shock to the entire machinery, especially the fly wheels, cranks, bed plates and air chambers, all of which are still in use, but in the award the Mechanical Engineer charged them against me as if they were entirely worthless.

As to the accident the Engineer reported to the Committee that the shock was so great that "the only wonder is that the engines were not ruined," and added, "the result has given me increased confidence in the ability of the machinery to do the work intended."

This accident was in no way caused by my fault. After the plungers were in place the city officers permitted the water to get into the pits and thus they stood two winters; they were doubtless broken by the water freezing in them. As they never had been in use no other cause for their breaking could be assigned. The damage thus caused was repaired by me.

In the meantime the engineers commenced to bore through different parts of the machinery and take out pieces for testing. I objected to this for two or three reasons, first: Because the contracts provided for casting pieces on each casting for the purpose of testing, and this had been done and the test pieces delivered to the Engineer. I had a right to have the iron tested in this way, as provided by the contract. The mode adopted by the Engineer was unfair, as the center of cast iron is more porous than the outside and by his mode this iron would be tested at the weakest point instead of at the average. This would make a difference of from 25 to 40 per cent., as was testified to by a dozen or more of the best founders and engineers of the city. The beams were the only parts which he tested according to the contract, and these showed the required strength. I believe that all the other important castings would have shown equally well if they had been tested in the same way.

It was also unfair to me not to test them when the castings were first made so that I would avoid the expense of finishing and putting them in place, which was as great as the cost of casting.

In December of 1878, I again had the engines ready to start, and they were then entirely completed except the painting and some polishing. When ready to start I notified the Engineer that it was unsafe to do so without an air pump to supply air to the air chambers. No provision was made in the contracts for air pumps. He said if it was needed I must provide it, but gave me no order for it. I declined to furnish it without an order and this was the excuse for forfeiting my contracts and taking the completed engines.

I started the engines without air and pumped water to Hiland avenue. This was done on several occasions, but for want of air the vibration of the guage was so great as to show it was dangerous to run them, and I told him (the Engineer) I would not be responsible for them breaking if run without air pumps.

On the 7th of February, 1879, the Engineer, backed by the Mayor and police of the City took possession of the engines

and in fifteen minutes put them in operation, and since that day to this they have with little interruption supplied the city with water. They were at different times disabled as I claim and could prove had I been allowed to do so, not from any defect in my work, but by reason of defects in plans and mismanagement and inefficiency in operation and for want of proper supply of air. The people were for years annoyed with reports of the broken engines. It is a significant fact that these reports ceased when they were taken out of the hands of Mr. Lowry and put in charge of another Engineer.

But there was and is a general impression that it was my bad iron that was constantly breaking; it was so reported by Lowry and people in his employ. This is not true, and if I had had the opportunity I could have proved it before a jury. It was proved before Lowry himself, by his own employees. Of over 3,000 tons of cast iron in over 1,000 pieces only two parts made by me were broken, the valve chambers and piston heads. Four of my valve chambers broke; they were all bedded on lead; one chamber put in by the Atlas Works having a tensile strength of over 30,000 lbs., was broken in the same way; the other which is bedded in lead, has not been in use as long as some of mine were, and will doubtless break in the same way.

Two piston heads made for me by one of the best foundries in the country (The West Point Foundry) broke; three put in by the City have broken in the same way. No other cast iron put in by me has been broken; a number of parts put in by the city have broken, among them eight air cushions which were subjected to the same pressure as the valve chambers and did not have the disadvantage of working upon an unsafe foundation. I know that many people will doubt this statement, but it is true, and I challenge contradiction that of the thousands of pieces of cast iron in these immense engines only six supplied by me have been broken.

I may be asked, what was the continual breaking about these engines? As I said, four valve chambers put in by me were broken at different times and two piston heads. There were also broken several wrists put in by me; these were of wrought iron and made by William Miller, one of the best forgemen in the country. Even the Mechanical Engineer did not have the face to charge me with these, as his assistant advised that they were too small, and they were afterwards replaced by wrists one inch larger, made of steel instead of iron. But these wrists as made by me were sufficient to do the work of these engines if they had been properly operated. They had

over fifteen times greater strength than the steam power necessary to run the engines. They were broken by imperfect operation, as I will show.

There were a number of wrought iron bolts which connected the valve chambers and check valve chambers. These were one and one-half inch bolts fastened through flanges cast upon the chambers. They stretched by the lead squeezing out, and finally broke. Afterwards they were replaced with steel bolts and they would not stand the work. It is apparent to any one who knows the machinery, that if the valve chambers had been on a solid foundation these bolts could not have broken. Hundreds of those put in by the city have broken, and many of the stoppages were on this account. If these wrought iron and steel bolts broke, what must be said of the cast iron to which they were attached and no part of which has failed? It must be exceptionally strong. Besides these breakages there were the three stops by breaking of piston heads put in by the City, and which were said to have a tensile strength of over 30,000 lbs. Then the eight air cushions put in by the City were all broken and renewed several times, and every time the engines stopped the cry was raised, "More of Hartupee's bad iron!" The fact is that the engines were stopped ten times on account of the breaking of machinery put in by the City to once by breaking of parts put in by me.

It will occur to any mechanic who takes note of the parts of machinery broken, that they are all connected together—the valve Chambers, the Air Chambers and the Wrists—and he would at once look for some local cause. The valve chambers were doubtless affected by the rocking caused by the lead foundation. No other cause could account for the breaking of the bolts connecting them with the check valve chambers. The breaking of the cushions and wrist is accounted for by the fact that the admission valves were too small to properly fill the pump barrels and the consequence was that the plungers moved through a partial vacuum with 100-ton fly wheel attached to it, and struck the water at rest, causing a shock which cannot be estimated, and the lead squeezing out. These two causes account for the breaking of the valve chambers and wrists. Both difficulties have been remedied in engines Nos. 1 and 2.

In view of these facts is not the Engineer's award monstrous? He takes from me $300,000 for delay in completing the engines at the time specified. The foundations were finished April 24th, 1875.

By the original contracts I had four and one-half months to

put them up, which would bring it up to Sept. 10, 1875, even upon the strictest construction of the contract. The engines were completed in December, 1878, and were taken by the City, February 7th, 1879. By a simple calculation which any fifteen-year old child in our public schools can make, it will appear that in his award the City officer has charged me $200 a day not only for delay during the four and one-half months I was entitled to after the foundations were finished, but he has actually charged for time when there were no foundations upon which to place them. But more than this he has made no allowance for time necessary to make the large amount of extra work which he ordered, some of it after the foundations were completed.

In view of the fact that the City delayed nearly two years in completing the foundations, some allowance should have been made for the inconvenience to me by their delaying me in my work.

This delay was solely chargeable to the default of the Engineer. A contract had been made with a man named Douglass for building foundations. The Engineer obstructed him and finally procured a forfeiture of his contract, and was himself put in charge of the work. The contract price was $150,000; they cost over $400,000. I suppose the Engineer concluded to make good to the City off me a part of the money he had wasted in this work. Aside from the delay in furnishing foundations the Engineer failed to furnish plans by which I was to work. Some important plans were not furnished until 1876, and many of them not until 1877 and 1878. I did not receive the drawings to make the large 106 cylinder until thirty days after the time the contract had expired. How was it possible for me to complete the engines without the plans to work by and the foundations to erect the engines on, which the City was to provide?

But the injustice of the forfeiture is further shown by the fact that in 1878 when I asked for steam to run the engines it could not be furnished because the boilers had not been completed and when the engines were completed in December the rising mains had not been finished to the baisirs, so he charged me $300,000 for not having furnished engines which could not have been used if furnished. The other ground of award against me is equally outrageous. As I said, he charged me with the full cost of replacing all the cast iron except the beams in all—$317,500—though it has not cost $60,000 to replace all my broken work and his too. He charged this to me as if it was entirely worthless, though it has stood for six years and is the

same iron which we now hear so much of as being the finest engine in the world, and doing a phenomenal duty of 135,000,000 foot pounds. When you hear of the perfection with which these engines work, does it not occur to you hear that Hartupee's iron cannot be so very bad, and that the workmanship must be tolerably good.

Why then did he condemn the material and work which has done such good service. He did not test it until it was completed and then did not test all of it. The parts tested are comparatively few; they were not tested according to the contract, but in a manner which would not give within 20 to 40 per cent. of the actual strength. Having thus tested a few pieces and finding them somewhat below the required strength, he assumed that the others were of the same strength, and condemned all. He did not order them taken out as the contract required, but charged them against me as if they had been removed; and then the City took and uses them. They are of some value; he treated them as if they were worthless.

Every mechanic knows that in machinery of this kind there are many parts which do not require tensile strength; for instance plungers, but he charged them against me, though he and his assistants were especially pleased with their close grain and hard surface.

He charged me with the counter weights, though the contract expressly excepted them in the clauses as to tensile strength.

But the injustice of his award is especially shown by reference to the bed plates—for these I contracted with the Atlas Works. When completed I was unwilling to pay for them until they were accepted by the Engineer, and asked him to inspect them, which he did and accepted them, whereupon I paid the Atlas Works about $25,000 for them.

After laying at the Atlas Works for over a year waiting for the foundations I put them in place, and after the engines were completed he condemned them and charges me with them as if worthless, though they are now in use, and he knows, as any mechanic knows, that they are sufficient for their purpose and good for one hundred years.

Even with his unfair mode of testing they were but little under the required strength of 250,00 lbs., and have fifteen factors of safety, that is, are fifteen times stronger than necessary to do the work.

In conclusion I wish to say that the City of Pittsburgh has, through the wonderful, and to me inexplicable intricacy of the

law, succeeded in obtaining two mammoth engines for her water works at an exceedingly low price. At the time these engines were forcibly taken from me the City was owing me on the contract $305,293 16. By the remarkable and iniquitous award of the Arbitrator Lowry this sum justly and legally my due, was wiped out, and instead of allowing me anything whatever, he decided I was indebted to the City in the sum of $317,500, which, added to the amount I ought to have been paid reaches the enormous sum of $622,793 16. Thus upon a contract amounting to $898,500 including extra work, he awarded damages to the amount of $622,793 16, and the city gets from me all this work and material for $275,206 84! Can anything be conceived more preposterous and monstrously unjust? I am fairly dazed and bewildered in contemplating the ingenious cunning and chicanery by which this result has been brought about. The engines have successfully supplied the City with water for over five years. The cost for alterations (which were required because of defects in Lowry's plans) did not exceed $60,000, and so far as the material is concerned the engines are good for a hundred years' service. I deny emphatically that there was any delay in the construction caused by me or that I used bad material. The delays with which I have been charged with at the rate of $200 a day were all caused by the City officials and the Engineer, and the materials were of the very best that could be purchased, and had I been permitted to present the case fully before a Jury, I would have proved that every dollar I claimed was honestly and justly due.

But the technical machinery of the law has always been successfully resorted to by my opponents, and the case kept from going to the jury at all. True it is I engaged in my contract to leave all disputes regarding the work as it progressed to Mr. Lowry, the Engineer. I supposed I was dealing with an honest man, and if he had anything to object to, he would raise the "dispute" at the time of the occurrence instead of waiting until the work was finished and then claiming it was imperfectly done, and this too in the face of the fact that he had monthly certified it was done according to contract.

When I started the engines to pump to the basin and the pressure guage showed they were working very unsatisfactorily for want of air in the vessels—as the air cushions he had furnished would not work as he had expected—I told him there should be an air pump furnished to make the engines work safely, the same as he had furnished for the same kind of en-

gines that he built for the City of Allegheny. He refused to furnish it, and I protested against running the engines without one, as the pressure guage showed that the engines were working under a vibrating pressure far beyond what was necessary to do the work. Mr. Lowry saw that there would have to be some great changes made to make his patent a success. He then concluded if he could have the contract annulled he could have all the money that was due me to make the alterations, and thus insure the success of his patent, and recommends the annulling of the contract, which was done. He then started the engines under these adverse circumstances, with the following results: He first broke eight of the air cushions that were furnished by the city at a cost of $1,200, and the evidence before him proved that they would stand 2,000 lbs to the square inch, and that the same pressure was on the valve chambers, when the pressure necessary to do the work would be only about 175 pounds. He altered and rebuilt these air cushions four different times and finally had to turn two of the feed pumps that I had furnished into air pumps, which should have been furnished at the first.

They then at different times broke four valve chambers. He discarded all the gum springs that held the valves down and replaced them with steel spiral springs, the gum not working satisfactorily, retarding the flow of water into the pump and preventing them from filling, as it was discovered after taking them out that they only lifted from one-half to five-eighths inches high for a 21-inch valve, which, to give a free opening would require five and one-half inch lift. There were two of the piston heads put in by me broken by pulling the rod out and shearing the steel keys; there were three put in by the City broken in the same way. The last one was put in with a large nut.

Mr. Lowry then recommended reducing the size of the pumps from 40 inches to 36 inches, because, as he says, the iron is not up to the required strength. He knows this assertion is false, or he knows less than I give him credit for, for the same pressure is on all the castings in the pits, whether the pumps are 40-inch or 12-inch, as any fifteen-year old schoolboy knows. The pressure is due to the heighth of the column of water instead of the size of the pump. The only thing it relieves is the beams, and they he reports are the strength required.

They broke a number of wrought iron wrists; any engineer can well see the cause of these breaks. Their own engineer, Mr. Schneller, testified that the only thing he found in the machinery that would break them was the pumps not filling. But

it is enough to know that he increased the size of the wrists one inch and made them of steel.

Now what is the last great change he makes? The large 106 inch diameter cylinder by 14 foot stroke compound engine has not been in use for over two years, not from any break or lack of tensile strength, but because it costs more to run it than all the gain, so they have entirely abandoned it, and cut it off from the small cylinder. Here are two large cylinders with all their appurtenances, which cost about $75,000, that are entirely abandoned, to remain a monument of the ability of Jos. L. Lowry, Mechanical Engineer of the Pittsburgh Water Works. Is it any wonder that the Mechanical Engineer was anxious to annul the contract so that he could get the use of the large amount of money to experiment and develop his patented engine, and for which he now sues the city for royalty.

The Courts have denied me the right of a trial by jury because I agreed to leave these "disputes" to Lowry, and they have also denied my right to apply for relief by suit in equity. But though financially ruined, and my bondsman obliged to pay for me to the City and her friends (?) over $400,000 and lose $100,000 he advanced me to finish the work, the Engineer refusing to give me estimates, I am still the rightful owner of those engines, unless paid the balance fairly due me when they were completed, viz: $305,393 16, and refund the money they have unjustly taken from my bondsman.

When I attempted to get this case in the Court of Common Pleas I was non-suited on technical points of law before the Hon. Judge White, who, in his remarks used this language: "The City has committed a great wrong in annulling the contract, and they must not take advantage of that wrong by committing a double wrong, and it would be monstrous to say that the Plaintiff had no standing in Court." Yet the Supreme Court says that I have no redress, and that this villainy must stand. The citizens of Pittsburgh have in use doing the work required engines for which they agreed to pay about $900,000, and for which they have in fact paid only $275,000. Is this not monstrously outrageous? Can the honest people of the city take satisfaction in feeling that they have obtained these engines which are now reported to be wonderfully effective at the expense of me and my bondsman? The Councils of the City of Pittsburgh hesitated to bring suit to collect this unjust award, but they finally got three attorneys to prosecute the suit on a per centage, namely: 20 per cent. They have, with the assistance of the City Attorney, gained one suit, and if they gain the other,

they will receive $80,000, and the CITY CONTROLLER CONGRATULATES the Citizens on a reduced millage of taxes on account of the money they have received from my bondsman, which I think is about as unjust as if they had taken the money out of his safe without his consent.

A. HARTUPEE,
THE CONTRACTOR.